Biomedical Microfluidics

U N I V E R S I T Y O F U T A H

BIOMEDICAL MICROFLUIDICS

The Center for Biomedical Microfluidics focuses on development of miniaturized fluidic systems that are capable of measuring, actuating, or separating biological materials. The Continuous Flow Microspotter (CFM) is one such device that operates like an inkjet printer. A solution composed of proteins, nucleic acids, cells, lipids, or other material flows through miniature channels and is spotted onto a substrate such as a microarray chip. This system allows highly accurate arrays to be developed inexpensively and accommodates the small sample sizes which are commonly encountered in biomedical applications. Expanded applications of the technology include point-of-care diagnostics. The scale and ease of use give the CFM a significant advantage in assays of patient samples performed by a physician or lab technician.

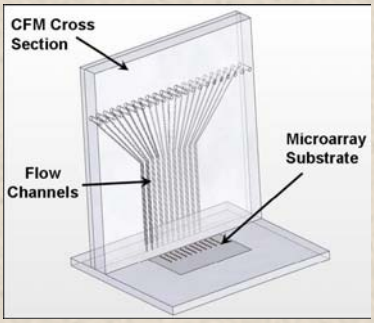
TECHNOLOGY

This year, the Center has further expanded the capabilities of the CFM to include ELISA assays and lipid bilayers. The Center has also continued its collaboration with the Center for Homogenous DNA in the areas of DNA extraction, amplification and melting, and is now working on continuous flow DNA amplification.

ACCOMPLISHMENTS

Over the past year, the Center generated its first external revenue for the microspotter technology, and has filed four patent applications. Negotiations are also underway between the Center's spinout, Wasatch Microfluidics, and several industrial partners for development funding and marketing agreements.

The quality of the microspotter has been demonstrated with a full suite of biological samples, including proteins, DNA, lipids, and cells. This led to a highlight of the technology in the publication *Nature Methods*. The ability to produce continuous flow DNA amplification has also been demonstrated as well as DNA melting in a 5x5 array. Significant strides have been made in the manufacturing of the spotter; preliminary high volume manufacturing is able to reliably produce a 12-spot system. In addition, an automated instrument has been developed for the CFM which is being tested by multiple labs.



THINK TANK

What if there was...

A printer for biological samples that creates inexpensive, highly consistent micro-arrays?

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